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Human Capital: A High-Yield Corporate Investment

by
Anthony Patrick Carnevale

It is human nature to waste anything that seems abundantly supplied. At the moment, there seems to be an overabundance of American workers. Our economy apparently is overflowing with underemployed, unemployed, and expendable people. As unseemly rates of unemployment hover in double digits, we are told that labor-saving machinery will soon make us all redundant. The bogeyman of technology is loose again.

We Americans are predisposed to the view that there are too many people. Our recent history encourages us to accept the notion that people are superfluous while machinery, financial capital, and the tangible fruits of the earth are scarce. Since 1946, we have been forced persistently to reshape our economic and social structures in order to bear, feed, clothe, educate, employ, and house the 76 million members of the American baby boom. As a result, while we have learned to value people for their purchasing power, we have not seen them as critical resources for production.

Things are rarely as they first appear. Upon closer examination, the apparent oversupply of Americans proves illusory. Unfortunately, our misconceptions and the biases of our recent history are threatening our nation's economic future. There is some risk that we will be misled by the notion that people are oversupplied and beguiled by our recent past into a national investment strategy that favors machines and resources extracted from the earth over people. This would shortly prove a serious economic error.

As the following evidence will demonstrate, the economic and social yield from investing in human resources is high and increasing. Our economic growth and productivity are becoming ever more dependent on our human resources.

Increasing Yield from Human Capital

The nation's economic history tells us with deadening statistical regularity of the increasing yield from human capital investment. The evi-

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dence, as summarized in Figure 1, divides the increase in national income between 1929 and 1978 into its human resource, land, capital, and productivity components. Figure 1 also shows a middle-of-the-road projection of the growth in national income and its component parts through 1990. The evidence demonstrates clearly the overwhelming historical and projected contribution of human resource factors to the increase in national income. By way of comparison, human resource inputs are shown to be consistently more important than capital. Further, land continues to slip as a critical economic resource. For every year measured since 1928, and projected through 1990, human resources have been the dominant factor accounting for growth in national income.

Figure 2 provides additional detail on human contributions to growth in national income. It breaks the human contribution into its component factors: hours worked, age/sex composition, and education. "Hours worked" have a nearly persistent negative effect on the human contribution to national income. The reason: People are working fewer hours and enjoying more leisure time. Thus it becomes a happy problem when understood in the context of another set of trends—the simultaneous rise in wages and worker productivity. Between 1929 and the mid 1960s, American workers managed to increase their leisure time, their wages, and their productivity all at the same time. The negative impact of "hours worked" is, therefore, good news. It is testimony to the ultimate success of the American economy throughout most of this century. It demonstrates that American workers have been working smarter, not harder.

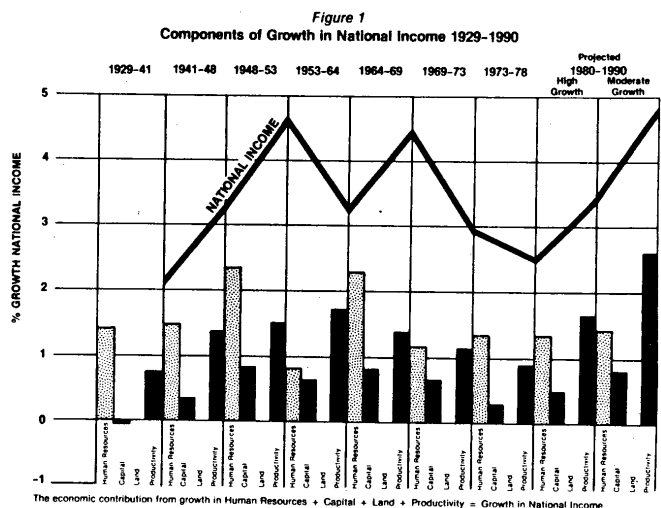
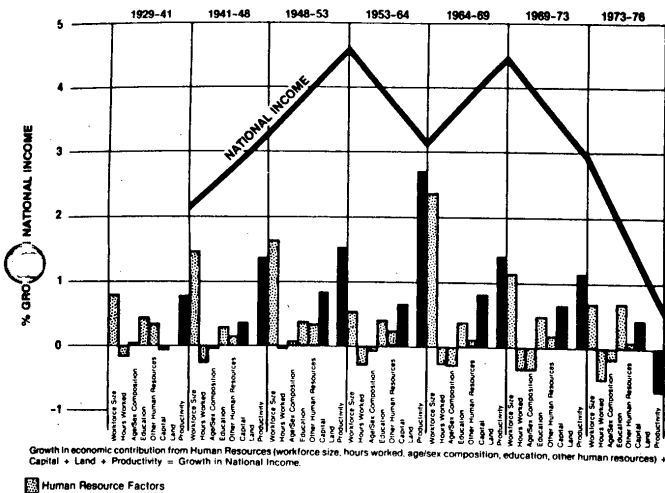


Figure 2
Components of Growth in National Income 1929-1976



The changing composition of the work force also has had a negative effect on growth in national income. This negative effect of labor-force composition is due mostly to the much publicized influx of youths and females into the work force. As the "baby boom" moved into the work force and as the number of females in the work force increased in the 1950s, a growing proportion of working Americans were relatively uneducated, untrained, and inexperienced. The concomitant lack of human capital investment and on-the-job experience in this group progressively reduced the contribution of human resources to income growth throughout the fifties, sixties, and seventies. However, as can be seen in Figure 2, with added training and experience on the job, the negative impact of young and female workers on national income growth will turn positive in the 1980s and should remain so throughout the twentieth century.

Perhaps the most remarkable finding is the sizable, positive influence of increased education on growth in national income. The nation's commitment to educational attainment has increased at an accelerating rate. Between 1940 and 1978, the median number of school years completed among American workers increased from 9.1 to 12.7. Over the same period, the proportion of all workers with a grade school education increased from 50% to 91%, those with a high school diploma from 19.7% to 41.4%, and those with four or more years of college from 5.7% to 17.7%.

The effect of education is all the more remarkable as it is probably understated. Its effect on national income measured in Figure 2 does not include the substantial investment by employers in formal employee training and development. Estimates of this investment run higher than \$30 billion. Even more substantial is the amount of informal, on-the-job training excluded from the measured amount of education in Figure 2.

Productivity: Human Decisions and Work Attitudes

Productivity is the human art of getting more with the same or fewer resources. This can be accomplished by increasing the intensity with which we utilize resources (working harder) or by increasing the efficiency with which we mix and use available resources (working smarter). Both depend on the skill and work effort of labor and management. *In short, productivity at its roots turns on human decisions and work attitudes.* The quantitative snapshot provided in Figure 3 demonstrates the overwhelming importance of the human factor in productivity growth. It accounts for the greatest proportion of productivity increases between 1929 and 1973.

Growth in on-the-job know-how, the reallocation of labor, and the increase in the quality of labor through education, training, and health care have consistently accounted for more than three-quarters of productivity increases since 1929 and for most of our growth in national income. By comparison, the amount of machine capital per worker has contributed a consistent, and disappointing, 20% or less. Figures 3 and 4 verify that,

Figure 3
Components of Productivity Growth 1929-1976

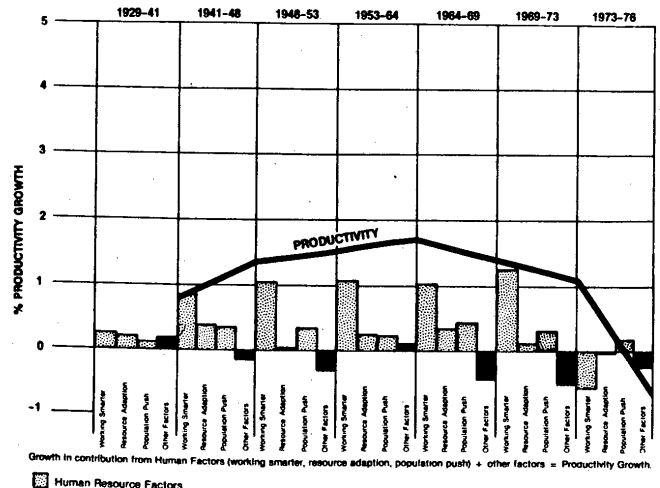
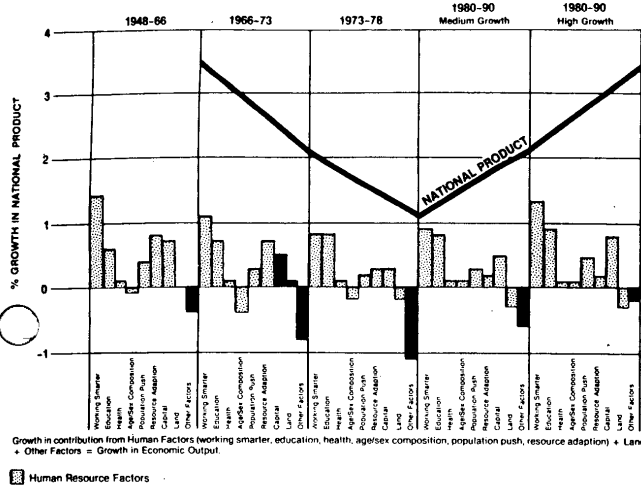


Figure 4

Components of Growth in Economic Output 1948-1978 and Projected Through 1990



in the absence of the human contribution, productivity would have been virtually non-existent throughout most of this century.

The economic history of the modern world is a tale of the inexorable shift from natural and machine resources to acquired human skills as the basic building block of production. In 1890, resources from the earth, including minerals, energy, and food, accounted for 50% of the gross national product. Today, these same resources account for less than 10%. Over the same period, human resources grew to account for more than one-fifth of the nation's total economic output. The acquired skills and qualities of the human population have become the master resource because they are the agents that transform the environment into usable goods and services.

In the last century, for instance, economists routinely listed land, labor, and capital as the factors essential for economic production. In the shift from an economy based on agriculture and other resources extracted from the earth to the post-industrial economy, land has virtually been eliminated as a prime factor of production. Available data suggest that land had no impact on economic growth between 1948 and 1966 and a negative impact on national income between 1966 and 1978.

In the United States, real earnings per hour of work have increased fivefold since 1900. Fully 75% of national income now derives from earnings. Nobel laureate Simon Kuznets's classic studies of economic growth show a rapid growth in the value added by the human factor relative to other factors of production. Kuznets finds that over this century, the

share of national income attributed to property declined from 45% to 25% while the human contribution to national income increased from 55% to 75%.

In 1817, an American laborer earned the equivalent of two bushels of wheat per week. By 1890, weekly wages were equivalent to nine bushels of wheat. Wheat dropped in price by half between 1900 and 1970, which means that if human labor had remained in rough proportion to agricultural output, workers could have expected the equivalent of 18 bushels per week in 1970. Instead, the weekly compensation of manufacturing workers was equivalent to 96 bushels.

Not only has the economic system demanded an increased quantity of human capital, it has rewarded an ever-increasing quality. Manufacturing workers received only two cents per hour more than unskilled workers in 1900. By 1970, the absolute difference was 79 cents. Teachers, the nation's lowest salaried professionals, received only 24 cents per hour more than unskilled labor in 1900. Their margin has increased to \$1.90 per hour in 1970.

A Service and Information Economy

In the latter portion of the twentieth century, the dominance of human resources in the American economy will continue and accelerate. We are presently in the midst of a shift to a post-industrial service and information economy where productivity will increasingly be embodied in persons, not raw resources or machines.

We already have come full circle since the early nineteenth century. In 1820, more than 70% of the labor force worked on the farm. In 1980, only 3% work on the farm, and 70% of the work force has moved through manufacturing and into services and information industries. What is more, the current shift from manufacturing to the service and knowledge industries will likely accelerate with new labor-saving technologies. Peter Drucker and others claim that the current 32% of our work force employed in manufacturing could shrink to 5% as early as 1995.

The coming of post-industrial society will not eclipse industrial production, nor the importance of the more highly skilled workers who will remain in industrial production. Agriculture did not disappear with the advance of industry. It became mechanized and more productive. In 1850, for instance, one farmer provided for four other people. In 1982, one farmer provides for 78 others. In much the same fashion, manufacturing and basic industries will rely more heavily on machinery and a smaller, more highly skilled work force for increased productivity.

An inevitable and accelerating economic trend underlies these data. That trend is what economists refer to as the "rationalization" of the world economy. Rationalization is the process by which high-skilled, high-technology intensive production concentrates in developed countries and, correspondingly, lesser skilled, technology-poor production concentrates in lesser developed nations. It is the sorting out of national competitive advantage in the world economy.

The competitive advantage of the lesser developed nations begins with their low-wage, low-skill labor pool. Our own competitive advantage relies

in the application of technological ac and accelerate the skill level of our labor force. In the long term, we cannot protect the U.S. share of unskilled production. Ultimately, we cannot match sweat equity with 950 million Chinese. We cannot compete in low-wage, low-skill production markets.

Our real competitors are the other, "more-developed" countries. As the pace of technological change accelerates, competitive advantage depends on our ability to adapt, to apply new technologies to production, and to integrate human skills with new machine technology. Adaptation will be all the more difficult as product life and skill life become shorter and shorter. *Ultimately, it is the rate at which we apply new technologies and integrate them with ready labor that will determine our success.* As the international rationalization process accelerates, the constant and optimal shifting of human and machine resources will be required, as will the constant retraining of the work force.

The evidence of the economic impact of human motivation is compelling. Convincing data show that the key difference in productivity among firms and nations cannot be attributed to the quantity of resource inputs but to some unmeasurable qualitative human "factor x." Research shows that productivity differences between workers in the same plants with the same pay and equipment can vary by a factor of four, and differences between plants with identical equipment, labor, and pay can vary by 50%. According to available research, the variation in "x" efficiency is rooted in motivational and cultural differences. Recent advances in the measurement of motivational factors in the workplace suggest that a 10% improvement in motivational factors allows for a 1% reduction in product prices.

The world of standing room only will never come. Births are influenced heavily by economic and social conditions. Births rose with income during the early agricultural development of economic systems and declined with the coming of industry and urbanization. In fact, declining birthrates have characterized the United States and other industrial nations for more than 200 years. The single exception to that trend occurred in the United States between 1946 and 1964 when 76,441,000 babies were born. This was 20,000,000 more births than in the previous 20 years (1926-1945). By all reports, however, the "baby boom" is an exception. It passes into history while the dominant trend toward low birthrates reasserts itself.

The economic effects of population decline are already upon us. Overall shortages of workers are hidden, however, under the cloak of the current high rates of unemployment. Recovery will reveal this overall shortage quickly and dramatically. In the 1970s, for instance, even the slower rates of growth produced 19 million new jobs for new workers. As the effects of population decline begin to impact in the 1980s, there will be only 16 million new workers. If the eighties achieve even the middling rates of economic growth characteristic of the seventies, the economy will generate a minimum of 19 million new jobs, creating a gap of 3 million jobs for which there will be no workers.

The anxious notion that we draw our resources from increasingly inaccessible reservoirs is scientifically unfounded and statistically unproven.

Human economic and social institutions always will adjust to the available supply of economic resources. Increased prices for scarce resources create incentives to expand supply. When rising prices fail to generate new supplies, substitutes become cost effective and available resources can be remixed in the production process. In the rare cases where the cost of extracting more resources becomes prohibitive, human tastes will adjust to accept substitutes or other goods and services.

The Bottom Line

The long view of economic history teaches us that people are the master economic resource. They are the master resource because they use their acquired skills and abilities as the catalytic agents that combine tangible elements and intangible ideas to make machinery and usable goods and services. In spite of that fact, there is a great temptation for employers to ignore the long-term value of human investment. This is especially true in times such as these when investment capital is short and unemployment lines are long. Secondly, in the short term, individual employers are faced with the prospect of losing their investment in people. Employees are mobile and machinery is not. When one employer invests in training and development, another can invest in wages and pirate employees at the completion of their training. Lastly, when jobs are in short supply, there is an equally greater temptation to rely on a quantity of cheap labor rather than a quality few. With jobs available for only one in ten unemployed workers, it is indeed a buyer's market.

Although employers generally appreciate the long-term yield of current investment in human resources, the press of daily business and the realities of the labor market encourage them to win their share of the nation's skilled workers through wage bidding and not through human resource development. *We, as a nation of employers, have been going to the well for some time for skilled workers without replenishing the source of supply.* As a result, the long term finally is arriving, as evidenced in a spate of statistics that suggest mounting skill shortages, reduced overall quality in the American labor force, shoddy workmanship, unsatisfactory maintenance, and wages that are not balanced by worker productivity. Further, attempts to improve productivity by increasing machine capital are proving costly and are resulting in protectionist resistance among current workers who are concerned for their own job security. Individual firms that once found it profitable to buy skilled workers by bidding up demand now find the price high, the supply short, and the quality low. What was good for individual employers has proven costly for all.

As a society, we will have to discover new mechanisms for employers to realize the longer-term benefits of employee training and human resource development. Public incentives that place investment in human resources at least on a par with investment in machinery will help. Federally operated training programs for skill shortages which do not have the accountability of the workplace will only be marginally effective. In the final analysis, resolution of the problem depends on the willingness of employers to look beyond the short-term economic dynamics that dis-

courage human resources investment. In the absence of employer-based strategies, however, public programs and regulations are inevitable.

Source for Figures 1-4

Anthony Carnevale, computed from Edward Denison, *Accounting for Slower Economic Growth: The United States in the 1970s*, Brookings Institution (Washington, D.C., 1979); 1973-78 data computed from John Kendrick, "Productivity Trends and the Recent Slowdown: Historical Perspective, Cause Factors, and Policy Options," American Enterprise Institute (Washington, D.C., 1979); 1980-1990 data computed from C. Jackson Grayson, "The U.S. Economy and Productivity: Where Do We Go from Here?" Joint Economic Committee (Washington, D.C., 1980), p. 44.